THE FUNDAMENTAL LAWS OF ANTHROPO-SOCIOLOGY.[1]

ANTHROPOLOGY is destined to revolutionize the political and social sciences as radically as bacteriology has revolutionized the science of medicine. Although the phenomena of social organization and development proceed in accordance with definite laws, these laws have for the most part eluded the grasp alike of theorists and of investigators, so that today, the very conception of a science of sociology and of a corresponding art of social control, excites skepticism and even ridicule. Much insight has, it is true, been gained in relation to economic phenomena; but the science of economics confines its scope to one phase—and that only a secondary phase—of social development, and the correlative art of increasing material well-being probably but hastens the decadence of the nation and the deterioration of the racial stock. The application of anthropology to the solution of the problems of social development promises more significant results. It furnishes a scientific explanation of the historical development of civilizations, by showing them to depend upon the processes of biological evolution; it certainly suggests sombre prospects for the future, but not beyond human control and bettering.

The importance of the ethnic factor in society—which anthropo-sociology seeks to ascertain and demonstrate—is not altogether a new conception. On the contrary, it has been too often exploited in a vague and arbitrary fashion, and has been sometimes twisted to conform with theories rather literary than scientific. There are indeed those who regard the conception as having already outlived its usefulness. Thus one of my critics, better versed doubtless in metaphyics and literature than in modern science, asserts that these ethnic theories have been

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already interred with Taine. This remark indicates that my learned critic has read no one of the works that he criticises — neither my *Sélections sociales* nor Ammon's *Natürliche Auslese beim Menschen*, nor any of the authorities cited in these books, nor any of the literature of the subject that has since appeared.[1]

I shall not attempt to recount the discoveries which have led

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[1] The fundamental works on the subject are : OTTO AMMON, *Die natürliche Auslese beim Menschen*, Jena, 1893, and LAPOUGE, *Les Sélections sociales*, Paris, 1896. The bibliographies they contain should be supplemented by the titles of the following recent publications :

LAPOUGE, "Recherches anthropologiques sur la problème de la dépopulation," *Revue d'économie politique*, 1895, pp. 1002–1029 ; 1896, pp. 132–146. "Indice céphalique des conscrits du Canton de Rennes," *Bulletin de la Société scientifique et medicale de l'Ouest*, 1896, pp. 90–98. "Corrélations financières de l'indice céphalique," *Revue d'Economie Politique*, 1897, pp. 257–279.

ODIN, A., *Genèse des grands hommes*, Paris, 1895.

UJFALVY, *Les Aryens*, Paris.

LIVI, *Antrometria militare*, Roma, 1896.

COLLIGNON, "Anthropologie du Sud-Ouest de la France," *Memoires de la Société d'Anthropologie de Paris*.

AMMON, *Die Gesellschaftsordnung*, Jena, zweite Auflage, 1896 ; "Die Geschichte einer Idee," *Rundschau der Deutschen Zeitung*, vol. i. Nos. 185, 186, 190, 192, 196, 197 ; "Die Arierdämmerung," *ibid.*, vol. ii. Nos. 27, 28, 33, 34 ; "Die wirthschaftliche Leistungsfähigkeit der drei weissen Rassen in Frankreich," *ibid.*, vol. ii. Nos. 109, 118 ; "Die Menschenrassen in Europa," *Tägliche Rundschau*, 1896, 133–155 ; "Fortschritte der Anthropologie und Sozial Anthropologie," *Naturwissenschaftliche Wochenscrift* vol. ix. no. 20.

CLOSSON, "Dissociation by Displacement," *Quarterly Journal of Economics*, vol. x. pp. 157–186 ; "Ethnic Stratification and Displacement," *ibid.*, vol. xi. pp. 92–104 ; "Social Selection," JOURNAL OF POLITICAL ECONOMY, 1896, pp. 449–466 ; "Recent Progress of Social Anthropology," *ibid.*, 1896, pp. 410–412 ; "La dissociation par déplacement," *Revue internationale de sociologie*, 1896, pp, pp. 511–537. "The Hierarchy of European Races," *American Journal of Sociology*, November 1897.

CHALUMEAU, *Influence de la taille humaine sur la formation des classes sociales*, Genève, 1896 ; "Les races et la population suisse," *Journal de statistique suisse*, vol. xxxii. p. 4.

RIPLEY, "Ethnic Influences in Vital Statistics," *Publication of the American Statistical Association*, 1896, pp. 18–40 ; "The Form of the Head Influenced by Growth," *Science*, N. S., vol. iii. p. 838 ; "The Racial Geography of Europe," *Popular Science Monthly*, beginning in February 1897.

FERRARI, "Studio critico di antropologia e sociologia," *Riforma sociale*, vol. vi.

WILSER, *Auslese und Kampf ums Dasein*, Karlsruhe.

PAULA, *Revue Scientifique*, 1896, vol. ii. p. 13–18.

NOVICOW, *L'Avenir de la race blanche*.

to the application of the methods of ethnical analysis to the problems of history and sociology. The progress of the movement is already recorded, so far as may be at the present time, in Ammon's *Die Geschichte einer Idee*. I shall merely mention here some of its phases most essential to an understanding of the subject. At the origin of every discovery there is usually one man of genius. The originating genius of anthropo-sociology was the Count de Gobineau. His *Essai sur l'inégalité des races humaines* appeared in 1853–1855. A second edition, published in two volumes in 1884, proves that the work did not fail to attract attention.[1] Gobineau, however, has not been widely read, and the few who have borrowed his ideas have for the most part failed to acknowledge their indebtedness. Gobineau was no scientist, but a wide traveler and a man of erudition and reflection. His fundamental idea was the superiority of the blond race. He showed that this race was more widely extended in antiquity, that it had constituted the intellectual and military aristocracy in the most flourishing epoch of former civilization, that its gradual disappearance or absorption by crossing had been followed by the decline and fall of the nations it had controlled. Not only is his demonstration of the influence of race and of racial purity upon the destiny of social groups in accord with history, but also his conception of race conforms to that of zoölogy and is rigorously scientific. His formulation, with the scanty data then available, of the laws of the evolution of peoples is indeed a work of genius. Anthro-sociology dates from the *Essai sur l'inégalité*.

Gobineau probably did not suspect that his fundamental idea could be formulated in figures. The first to work out a statistical demonstration of the unequal aptitude of different races in the same environment was Durant de Gros, one of the great originators of modern hypnotic science and a pioneer in many fields of thought. In an essay before the Anthropological

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[1] [A partial translation of the first edition was published in the United States in connection with the ante-bellum controversy as to the racial position of the negro.— Translator's note.]

Society of Paris in 1868[1] Durant brought to the attention of his colleagues the differences in respect to the prevailing form of the head (as indicated by the cephalic index[2]) between the urban and the rural population of the department of Aveyron.[3] He cited also similar differences between the educated and the uneducated elements among the urban population of Rodez. The author of this important discovery committed at the time the error of seeking for an explanation of the phenomenon he noticed in a supposed tendency of urban life toward dolichocephaly; but, continuing to meditate on the significance of the facts, he, at about the same time as Ammon and myself, reached the true explanation — the working of selection.[4]

Calori observed later in Italy the same difference in cephalic index between urban and rural population.[5] In 1881 Jacoby pointed out very clearly the selective influence of cities in attracting the superior elements, but did not treat the matter from the point of view of racial selection.[6]

The establishment of anthro-sociology as a distinct branch of investigation dates from my lectures at the University of Montpellier (1886–1892) and from the publication by Ammon of his researches on the conscripts of Baden.[7] In the last few years specialists in various countries have pursued this method of investigation, and already a very considerable literature has appeared.

I shall not attempt to discuss here the conclusions drawn by various selectionists from facts established by their anthropo-

[1] "Excursion anthropologique dans l'Aveyron," *Bulletin de la Société d'Anthropologie*, 1869, p. 193.

[2] The "cephalic index" is the ratio of the breadth of the head to its length. It is found by dividing the breadth $\times 100$ by the length. Thus, for example, a head 186^{mm} in length and 152^{mm} in breadth would yield an index of 82.1.

[3] The particular arrondissements cited were Rodez, Villefranche, Milhan, and St. Affrique.

[4] This is shown by manuscripts which Durand has kindly placed at my disposal.

[5] *Archives pour l'anthropologie*, vol. xvi. p. 274.

[6] *Études sur la sélection*, Paris, 1881.

[7] *Anthropologische Untersuchungen ueber die Wehrpflichtigen in Baden*, Hamburg, 1890.

logical researches.   I shall rather attempt to formulate the laws which seem to result from a synthesis of the available data, indicating the limits within which they have so far been verified, and illustrating each of them with some examples, taken sometimes from the standard works on the subject, but more often from the less easily accessible essays scattered through various journals, or, again, from unpublished manuscripts.   The exposition of these laws, most of which are here formulated for the first time, may make rather difficult reading.   My excuse must be that the introduction of interesting details would make the exposition of excessive length.   I ought, perhaps, to offer an excuse in another respect.   As the general reading public, thanks to our superannuated system of education, however well instructed it may be in ancient languages and other comparatively useless branches, is comparatively ignorant of such sciences as anthropology, I am compelled to supply explanations that may seem to some unnecessary.

We will begin, then, with some observations on the anthropological races of Europe.[1]   The two ethnic elements which predominate in Europe were designated by Linnæus, *Homo Europæus* and *Homo Alpinus*, respectively.   The first is the tall, light-haired, blue-eyed race, long of head (dolichocephalic[2]) and long of face, of which the best type is the Anglo-Saxon or the Scandinavian — an ambitious, energetic, and courageous race.   The second is the shorter, brunette race, round of head (brachycephalic) and face, of which the type is found in the Alps and the

[1] The word "races" in the anthropological sense has nothing in common with the word as ordinarily used by politicians and writers when they speak, for example, of the " Latin races," the "Slavic races," etc.   The principal difference is that races in the first sense exist, while "races " in the second sense do not.

[2] In this article the terms dolichocephalic and brachycephalic are used in the general sense as describing or contrasting the two types of head form.   They are often employed in a more technical and definite sense as a part of the following terminologies : In the terminology of Topinard the term dolichocephalic indicates indices from 65 to 69; sub-dolichocephalic from 70 to 74; mesaticephalic from 75 to 79; sub-brachycephalic, 80 to 84 ; brachycephalic, 85 to 89.   Of other terminologies the best is dolichocephalic $= 70$ to 74 ; sub-dolichocephalic $= 75$ to 79 ; sub-brachycephalic $= 80$ to 84; brachycephalic $= 85$ to 89.

Haute Auvergne—a cautious, unprogressive race, strongly attached to its native abode. After the manner of Spencer's and Schaeffle's analogy between the social organism and the physical body, the first race might be compared to the nerve cellules and the second to the muscular cellules. It is common to designate *Homo Europæus* as the "Aryan race," because he has been supposed to have descended from the Aryans of Bactria; and, although the inverse relation is now established (since the "Aryans" appear to have formed one branch of this race), the use of the two terms so roughly synonomous may be tolerated. Some antiquated anthropologists still designate *Homo Alpinus* by the term Celto-Slav, under the mistaken notion, originated by Broca, that *Homo Alpinus* predominated in Slavic countries and among the Celts of Cæsar. In reality the Celts and Slavs were of the blond race — *Homo Europæus*. The term Celto-Slav is therefore to be avoided.

In the south of Europe, diverse secondary elements are mingled with these two principal races. For lack of a better classification they have been grouped under the common caption of the Mediterranean type. The principal element among them is very dark, short of stature, long of face and head — the Mediterranean type in the proper sense, the inhabitant of Corsica, Sardinia, and southern Italy. But there are other types, also, called Mediterraneans, such, for example, as the Kabyles, with short faces. Add to these races the Semites of Arab origin, especially in the north of Africa and in the Orient, and add, again, as one advances northward in Asia, an ever-increasing proportion of *Homo Asiaticus*, yellow skinned, dark of hair and eye, dolichocephalic in the pure state, but often very brachycephalic from an ancient crossing with the so-called *Acrogonus* type; which last appears to have played a rôle also in the ancestry of *Homo Alpinus*.

Homo Europæus predominates in Great Britain and among the English colonists everywhere, in northern Germany, Holland, Scandinavia, and the United States. *Homo Alpinus* predominates in France, Switzerland, southern Germany, Austria,

Poland, northern Italy, the Balkan peninsula, Asia Minor, and the Caucasas.

Bohemia, the middle region of the Danube, and Russia are peopled by various combinations of *Homa Europæus* and *Homo Alpinus*. Southern Italy is given over to the Mediteranean type. Spain is inhabited by Mediterraneans, with an admixture of *Homo Europæus*. This last ethnic composition is characteristic also of Chile, Uruguay, and the Argentine, but in Mexico, Peru, Bolivia, and Venzuela it is absorbed by the predominating indigenous population. The north of Africa is inhabited by a mixture of Mediterranean, Aryan, and Semitic stocks.

In the hierarcy of races the first place must be given to *Homo Europæus* (the dolichocephalic-blond or so-called Aryan),[1] while *Homo Alpinus* (the bracycephalic type) and the Mediterranean probably rank in the order named.

The laws which we shall have to consider concern the respective position and relation of the three races with reference to social status and with reference to migration and choice of domicile. We shall see in operation, for instance, a process of social stratification in which the several races come to occupy a social or political position, each more or less distinct from the others. Again, we shall see in operation a process of geographical displacement of one of the three races — a movement that may take the form either of the abstraction of that race from a given community (by emigration to foreign countries) or of its concentration in certain localities within the community (as by migration from the country to the cities).[2]

In the countries where the principal elements of the population, between which our comparisons will be drawn, are *Homo*

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[1] This conception of the relative worth of the different races was developed by Gobineau. His theory, however, of the formation and breaking up of social groups laid stress on only two factors in the process — conquest and intercrossing of races, thus overlooking many forces of social selection, the working of which we can now discern.

[2] For a fuller discussion of the significance of stratification and displacement as processes of selection, see CLOSSON : "Dissociation by Displacement," *Quarterly Journal of Economics*, January 1896, and "Ethnic Stratification and Displacement," *ibid.*, October 1896.

Alpinus and the dolichocephalic race, we may safely accept the cephalic index as a decisive and convenient means distinguishing between the two races. It must not be inferred that any mystic significance is attached to the relative length and breadth of the head ; but the form of the skull indicates the racial pedigree of the individual, and whether in the race or the individual a correlation exists between the psychological character, the cerebral structure and the form of the skull.[1] In countries, on the other hand, where the brachycephalic is wanting and where the comparison is between the dolichocephalics, whether of the same or of different races, the cephalic index is no longer useful, and it is necessary to find in the coloration or in the special morphology a means of distinction which is sufficiently constant and sufficiently decisive as between the different ethnic elements.

With these explanations we may proceed to a consideration of some of the more important laws of anthropo-sociology.

LAW OF THE DISTRIBUTION OF WEALTH.

In countries inhabited jointly by Homo Europæus and Homo Alpinus, the former element possesses more than its proportionate share of wealth.—Our first illustration of this law is from France. The following tables give a most significant comparison of the economic efficiency of the two races, as indicated by their respective taxpaying capacity. The first table presents a comparison between the most dolichocephalic departments of France so grouped as to include 10,000,000 inhabitants, and the most brachycephalic departments so grouped as to include an equal number of inhabitants :

[1] [One critic has said that " it is as impossible to infer the psychological character from the form of the skull, as to judge the accuracy of a clock from its external form." But if the exterior of the clock is so marked that we may thereby determine its make, we may usually draw inferences as to its probable accuracy. Now, the head form, as expressed by the cephalic index, is a sign of the hereditary and racial *make* of the individual, and so indirectly an indication of his probable psychological character. As in the case of the clocks, the external mark is not necessarily a perfect indication in every individual instance, but may be accepted as a safe guide in the average of a considerable number of cases.—Translator's note.]

Year	Group of the most dolichocephalic departments embracing 10,000,000 inhabitants francs (,000 omitted)	Group of the most brachycephalic departments embracing 10,000,000 inhabitants francs (,000 omitted)
Taxes on land (unimproved property)...... 1896	17,725	29,891
"　" personal property............... 1896	26,485	13,227
Door and window tax................... 1896	17,239	8,581
Taxes on transfers of property........... 1894	59,312	33,667
"　" bequests..................... 1894	7,378	4,801
"　" inheritances................. 1894	70,920	32,923
"　" leases and pledges........... 1894	3,663	1,288
Mortgage taxes...................... 1894	2,473	1,166
Stamps (ordinary, etc.)................. 1894	15,920	11,113
Stamps on receipts.................... 1894	14,430	2,497
Stamps proportioned to amount involved in transaction...................... 1894	8,485	2,123
Tax on beverages 1894	186,229	79,969
"　" tobacco 1894	122,926	84,471
"　" bicycles, etc................. 1894	643	386
Receipts of Departments............... 1892	76,307	68,519
"　" Communes................. 1893	399,790	109,485
Octroi............................ 1893	191,077	28,609
Indebtedness of Communes............. 1893	2,271,260	373,447

The greater taxpaying capacity of the dolichocephalic population as indicated by the above table is certainly striking; but in order to realize the full weight of the figures it is necessary to take account of two considerations: First, the group of ten million dolichocephalic population is embraced in only thirteen departments, whereas the ten million brachycephalics make up the population of thirty departments; this difference in the extent of area covered explains the sole case, that of taxes on land, in which the brachycephalic group pays a larger revenue to the government. Secondly, the dolichocephalic group includes Paris, but even if one excludes the city, the tax-yielding capacity of the remaining seven million dolichocephalics is about equal to that of the ten million brachycephalics.

The following table gives a similar comparison between the tax yield of the twenty most dolichocephalic departments and that of the twenty most brachycephalic departments.

	Year	The twenty most dolichoce-phalic depart-ments francs (,000 omitted)	The twenty most brachyce-phalic depart-ments francs (,000 omitted)
Taxes on land (unimproved property)......	1896	28,096	21,491
" " personal property...............	1896	33,470	9,566
Door and window tax....................	1896	21,636	6,055
Taxes on transfers of property............	1894	74,731	24,172
" " bequests......................	1894	9,206	3,572
" " inheritances	1894	94,099	23,225
" " leases and pledges.............	1894	4,444	935
Mortgage taxes.........................	1894	3,001	853
Stamps (ordinary, etc.)...................	1894	21,060	7,938
Stamps on receipts	1894	15,912	1,869
Stamps proportioned to amount involved in transaction	1894	9,621	1,667
Tax on beverages.......................	1894	209,882	55,933
" " tobacco.......................	1894	160,028	58,422
" " bicycles, etc...................	1894	868	283
Receipts of Departments................	1892	103,142	46,572
" " Communes	1893	449,458	78,500
Octroi..................................	1893	209,928	21,167
Indebtedness of Communes..............	1893	2,563,405	270,835

The above tables demonstrate the economic, and especially the commercial, superiority of *Homo Europæus*. The departments with the lower average indices are more densely populated, much more wealthy, much more active; property therein is more valuable, industry, more flourishing, commerce especially much more considerable; the financial needs of the community are more extensive, and in consequence the public indebtedness is greater; the more active and progressive character of the people is shown even by the more general use of the bicycle.[1]

This law applies also in Switzerland, in Germany, in Austria, but the diversity within each of these countries of the political organization and of the basis of taxation, renders demonstration more difficult. The law explains for example a phenomenon much discussed of late by German journalists. In the Grand Duchy of Baden, an official inquiry looking toward a reform of

[1] For a more detailed study of these financial statistics see LAPOUGE, "Corréla-tions financières de l'indice céphalique." *Revue d'économie politique*, March 1897.

mortgage taxation developed the fact that the Catholic precincts
are the most heavily encumbered with mortgages on rural prop-
erty, the Protestant precincts the least heavily burdened; as
shown in the following table :

The 18 precincts least encumbered showed	55% Protestants,	45% Catholics.
The 17 precincts moderately encumbered showed - - - - - - - 34%	"	66% "
The 17 precincts most encumbered showed 9%	"	91% "

This result is significant for the anthropo-sociologists, and
especially for Ammon and myself, because Catholicism is char-
acteristic of brachycephalic populations (France, South Ger-
many, Austria, Poland), and Protestantism of dolichocephalic
populations (England, Holland, Scandinavia, North Germany).
It is then the brachycephalic communities of Baden that are
least independent financially. The law of the distribution of
wealth is equally applicable to Spain and Italy, but here the
demonstration becomes still more difficult, because allowance
must be made for the prevalence of the Mediterraneans who
cannot be distinguished by the cephalic index from *Homo Euro-
pæus,* but whose aptitude is much less. It would then be neces-
sary for an exact demonstration to compare the economic effi-
ciency of the different ethnic elements as distinguished not only
by the cephalic index but also by the index of nigrescence. In
default of this more exact comparison, we will content ourselves
with one based on the cephalic index as the means of ethnical
analysis. This in itself furnishes results sufficiently striking.
The northern part of Italy is populated by a mixture of *Homo
Europæus,* of brachycephalics, and of Mediterraneans; in the
southern part of Italy, the last named element becomes the pre-
dominant one in the population, whereas the first named almost
disappears. We may then select in the north a group of the
most brachycephalic provinces, together with a group (about
equal in population) of the most dolichocephalic provinces.
The dolichocephalic group will be in some measure represen-
tative of the element *Europæus.* Again we may select in the
south two similar groups, one of the most brachycephalic prov-

inces, the other of the most dolichocephalic. But in this case *Homo Europæus* is absent from both groups, and the dolichocephaly of the last named indicates the more general predominance therein of the Mediterranean element. The following table shows the amount of taxation in four groups of provinces thus constituted. The first group comprises the most brachycephalic provinces of northern Italy (indices above 85); the second group, the most dolichocephalic provinces of the same region (indices from 84.1 to 82); the third the most brachycephalic provinces of the south (indices from 81.7 to 80); and the fourth the most dolichocephalic of the southern provinces (indices from 79.7 to 78.5):

Class of Taxes 1894	Northern Italy		Southern Italy	
	The most brachycephalic provinces francs (,000 omitted)	The most dolichocephalic provinces francs (,000 omitted)	The most brachycephalic provinces francs (,000 omitted)	The most dolichocephalic provinces francs (,000 omitted)
Tax on land	17,228	11,154	17,379	14,118
Tax on buildings...............	10,875	14,307	9,295	9,589
Tax on personal property........	16,968	25,346	9,910	10,096
Inheritance tax.................	7,097	6,904	3,527	4,184
Registration fees	8,409	8,866	7,366	7,681
Total	60,577	66,577	47,477	45,668

In the north the dolichocephalic group, notwithstanding the fact that it is slightly weaker numerically,[1] shows the higher tax-paying capacity. On the other hand, of the two southern groups, the provinces containing the larger proportion of brachycephalics yield rather more taxes than those containing the larger

[1] The four groups are constituted as follows : (I) Torino, Novara, Cuneo, Sondrio, Belluno, Padova, Treviso, Forli, Ravenna, Reggio Emilia, Pesaro, aggregating 4,680,000 inhabitants; (II) Porto-Maurizio, Genova, Brescia, Firenze, Grosseto, Livorno, Lucca, Massa, Pisa, Pavia, Arezzo, Ascoli, Macerata, 4,516,000 inhabitants; (III) Siracusa, Trapani, Girgenti, Potenza, Foggia, Bari, Caserta, Benevento, Avellino, Campobasso, Aquila, 5,022,000 inhabitants; (IV) Cagliari, Sassari, Palermo, Messina, Catania, Caltanissetta, Reggio Calabria, Cosenza, Catanzaro, Lecce, 5,038,-000 inhabitants.

proportion of dolicho-Mediterraneans. The economic inferiority of the Mediterraneans is more clearly brought out by a comparison of the low yield of taxes in the southern provinces where this race predominates, as compared with the two northern groups.[1] It is to be remarked that the brachycephalics in Italy, as in France, are characterized by the large part which land (unbuilt property) plays among their possessions.

In the countries where *Homo Europæus* predominates, wealth is in general the greatest (England, the United States, Holland, etc.). It is possible, however, that the law would not be applicable as between the most dolichocephalic and the least dolichocephalic elements within such communities, for a comparison between such elements would be a comparison not so much between *Homo Europæus* and *Homo Alpinus* as between different degrees of dolichocephaly among the former racial element.[2] This question, however, is an open one and in general the correlation between economic capacity and cephalic index appears to have a greater degree of universality than the law of wealth distribution as above stated would imply; for the most dolichocephalic portions of India (Bengal) and of China are also the richest.

LAW OF ALTITUDES.

In regions inhabited jointly by Homo Europæus and Homo Alpinus, the former is concentrated in the lower levels.—In the continent of Europe, the habitat of *Homo Europæus*, approximately coincides with the quarternary alluvial belt of the North Sea and the Baltic. The anthropological map may be almost superposed upon the geological. In France the Aryan element is mainly localized in the plains of Flanders, of Artois, and of Picardy, and in the lower valleys of the rivers; toward the south it becomes rare at elevations of more than 100 meters, yet it pre-

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[1] For a further discussion of this point the reader may be referred to Closson : "The Hierarchy of European Races," *American Journal of Sociology*, September 1897.

[2] *Cf.* CLOSSON, "Dissociation by Displacement," *Quarterly Journal of Economics*, January 1896 ; "Ethnic Stratification and Displacement," *ibid.*, October 1896.

dominates up to that altitude in the valleys of all the streams flowing into the Mediterranean Sea. Reciprocally, what may be called the axes of brachycephaly, coincide with the lines dividing the watersheds of the rivers. The principal axis starts from Galicia, follows the mountain ridge to the middle of the French Pyrenees, rejoins the central plateau, embraces the main body of the Alps, and then divides ; one branch follows along the backbone of the continent by the Black Forest, the mountains of Bohemia, and the high land which forms the dividing line in Russia. At this end the axis ends in a vast enlargement covering Poland and the surrounding regions. The other branch rejoins by the Balkans the great brachycephalic area of Asia Minor. Secondary branches follow, one the chain of the Apennines to about the center of the range, another the dividing line between the watersheds of the Loire and the Seine, another the chain of the Vosges with an enlargement in the east of Belgium, and still another, the mountain chain of the Balkan peninsula. It is worthy of remark that the maximum of brachycephaly does not coincide exactly with the crest of the chains, but lies to the north or to the west according to the orientation of the ranges.

In the mountain region of France the cephalic index closely corresponds with the altitude. In the less elevated regions, the degree of brachycephaly is often considerable at an elevation of 100 meters ; it is very marked in Britainy in the mountains of Arrée and still more in the upland region designated as the Switzerland of Normandy. When a river in its lower course or even close to its mouth cuts through a range of hills, the inhabitants of the bordering country are almost always more brachycephalic than those of the country along the middle course of the stream and of the delta. As instances of this may be cited the Rhone, the Hérault, and the Loire.

The law of altitudes is subject to one exception in France ; the region of Limoges and that of Perigueux, although of rather high altitude, are populated in large proportion by *Homo Europæus*. It is probable that these populations represent Gallic

elements driven from the plains by a second band of conquerors and crowded back into the hills. The exception of the plains of Poland, occupied by brachycephalics, is doubtless susceptible of an equally simple explanation. The law may be subject to further local exception because of the counter influence of the law of internal colonization; thus, for example, according to Chalumeau, the dolicho-blonds have colonized the hitherto uninhabited upper valleys of the Alps.

The law is not applicable in England nor, generally speaking, in Spain, because of the absence of the brachycephalic element. In Spain, however, the rule holds good as regards the coast chain of the north. In Italy, and in Corsica where the two elements contrasted are the brachycephalic and the Mediterranean, the former is often found in the lower, the latter in the higher altitudes. Livi gives a table of indices[1] according as the chief place of the mandamento or district is above or below 400 meters in altitude. The lower country is less dolichocephalic in Sicily, in Calabria, in Basilicata, in Abruzzes, in Campania; but in all northern Italy the rule holds good.

The law of altitudes has a wider applicability than the above statement of it implies. The axis of brachycephaly continues in Asia, through Asia Minor, Armenia, the plateaus of central Asia, Tibet, Mongolia, Manchuria and even to Bering Strait, with an important branch descending into Indo-China. So, also, in America the great axis of the Cordilleras is in the main an axis of brachycephaly; and the high plateaus of Mexico, Peru, Bolivia, and Patagonia are brachycephalic. Again, Ujfalvy, studying the mountaineers of the north of Pamir, has found that the brachycephaly of the people increases with the altitude of their habitat.[2] It is probable that a study of the rest of the world made with the same care that has been bestowed on western Europe would make possible a wide generalization with reference to the parallelism of cephalic index and altitude.

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[1] *Antropologia militare*, p. 85.

[2] Thus the average index of the Maghians and Karatéghinois is 84.68, while that of the Faûs, Falgars, and Kehtonts is 87.02.— UJFALVY, *Les Aryens*, p. 388.

LAW OF THE LOCALIZATION OF CITIES.

Important cities are almost always located in the dolichocephalic regions or in the least brachycephalic parts of brachycephalic regions.— In France, Toulon, Marseilles, Nîmes, Montpellier, Narbonne, Bordeaux, Limoges, Bourges, Tours, Reims, Paris, Arras, Lille, Havre, etc., conform to this law. Toulouse and Lyons are in the least brachycephalic parts of brachycephalic regions. St. Etienne is in the center of a region of maximum brachycephaly, but the existence of this city is artificial and its location is due to the presence of mineral deposits. Rennes and Mans are decided exceptions to the law. In Belgium and Germany almost all the urban centers conform to the law ; cities situated like Munich in brachycephalic regions are in the least brachycephalic part thereof. In Austria, Vienna and all the principal cities appear to conform to the rule. It is the same also in Russia. In Italy, Turin forms the principal exception, but Milan, Florence, Rome, and Naples are in the most dolichocephalic regions or the least brachycephalic parts of brachycephalic regions. In Spain, with the exception of Malaga, all the important cities, Madrid, Barcelona, Cadiz, Alicante, Valencia, Cardona, Grenada, Valladolid, Saragossa, etc., are located in accordance with the law.

This law is not confined to the large cities ; it extends, subject to more frequent exceptions, to the smaller cities and even to the villages. In the absence of any reason to the contrary, the principal center of population in each geographical unit tends to coincide with the center of the lowest cephalic indices.

This law appears also to be of wide application. The largest cities of India and China are in clearly dolichocephalic regions, and wherever are found the remnants of great cities in countries now tending to brachycephaly, the population of former times appears to have been more dolichocephalic. In America the greatest cities are in the regions inhabited most exclusively by dolichocephalic elements, whether English or Spanish, and urban development is more characteristic of the United States and of the Argentine than of countries like Mexico and Peru where the

indigenous elements still form a great part of the population. The great cities of Oceanica are the urban centers of dolicho-cephalic Aryan populations.[1]

This law of the location of cities seems to point to a law of the greater density of dolichocephalic populations, but the law in this last form has not been so clearly established. It is obviously closely connected also with the law of altitude and with the law of the distribution of wealth.

LAW OF URBAN INDICES.

The cephalic index of urban populations is lower than that of the surrounding rural populations.—The first formulation of this law was made by Durand de Gros in 1869, in the department of Aveyron. He gave the following figures: Rodez, index of rural population 86.2, of urban population 83.2; Millau, rurals 85.8, urbans 84.1; Villefranche, rurals 88.4, urbans (insufficient number of subjects) 75.5; St. Affrique, rurals 83.4, urbans 82.2. In investigations running from 1887 to 1890, I found that the same law was applicable to the small cities of Hérault: Cler-mont, rurals 84.4, urbans 79.5; Lodève, rurals 82.3, urbans 79.7; canton of Limel 83.3, city of Limel 82.1, city of Marsillargues 81.3. Since 1890 numerous documents bearing upon the urban concentration of dolichocephalics have been published by Ammon, Livi, Weisbach, and Oloriz. As regards France, researches of Dr. Collignon and myself have proved the gen-eral applicability of the law, and have yielded figures for a number of localities.

The department of the Seine, that is Paris, has, according to the latest researches of Collignon, an index of 80.9; Seine et Oise has an index of 81.4; the surrounding departments have indices varying from 81.3 (Eure) to 83.1 (Loiret) but nearly all of them are between 82 and 83. The Seine is, moreover, one of the most dolichocephalic (the seventh in order) depart-ments of France.

[1] New Zealand shows the lowest average cephalic index of any Anglo Saxon population.

In the southwest of France, Collignon has shown that the law applies to most of the cities of importance ; Limoges, Péri-gueaux, Bordeaux, la Rochelle, Bayonne, Tarbes, Auch, Mont de Marsan, Pau. The difference between the rural and the urban index is usually about two units : Bordeaux, rurals 81.8, urbans 79.5; la Rochelle, rurals 82.3, urbans 81.4; Pau, rurals 84.1, urbans 82.1 ; Bayonne, rurals 82.4, urbans 80.5 ; Tarbes, rurals 86.8, urbans 85.0. A more detailed study of Bordeaux and its suburbs gives the following suggestive results :

Cities					Index	Difference
City of Bordeaux,	-	-	-	-	**79.58**	
Suburbs { Blanquefort,	-	-	-	**80.63**	1.05
Pessac,	-	-	-	-	**80.90**	1.32
Créon	-	-	-	-	**81.54**	1.96
Carbon-blanc,	-	-	-	**82.00**	2.42

In Bordeaux 60 per cent. of the subjects had indexes below 80, in the suburbs 32 per cent.

In the west of France the following cities also may be cited as exemplifying this law : Niort, Nantes, Rennes, Angers, Laval, le Mans, St. Malo, Contances, Cherbourg. At Rennes, as shown by my latest researches, the difference between the rural and the urban indices is about two units : 100 rurals of the canton of Rennes gave an average index of 84.7, 67 urbans of Rennes an index of 82.8. In central France the law has been verified for Clermont, Bourges, Orleans, and Nevers ; and it is equally applicable to Lyons. In the east may be cited Besançon, Mâcon, and Grenoble, and in the south, Marseilles, and Narbonne, in addition to the cities already mentioned in Hérault and Aveyron.

In the Grand Duchy of Baden, the extensive researches of Ammon show a similar difference between urban and rural indices : for Karlsruhe the index of the rurals is 83.0, that of the urbans is 81.4; at Freiburg the indices are respectively 83.6 and 80.8 ; a similar difference is found in the case of Mannheim, Lörrach, Heidelberg and Tauberbischofsheim. The following tables show more clearly the difference in the ethnic compo-sition of the urban and of the rural populations :

Cities	Per cent. of Indices below 80 among	
	the Urbans	the Rurals
Mannheim	43.4	34.8
Heidelberg...............	37.5	17.9
Karlsruhe....	33.0	13.0
Lörrach............................	25.8	21.4

Cities	Per cent. of Indices of 85 and above among	
	the Urbans	the Rurals
Mannheim.............................	10.4	14.5
Heidelberg..............................	4.6	25.4
Karlsruhe......	16.5	32.9
Lörrach.................................	25.8	28.8

The following tables may also be given indicating the absolute dimensions of the head among the urbans and rurals respectively:

Cities	Length of Head			
	Per cent. 19cm and above among		Per cent. less than 18cm among	
	Urbans	Rurals	Urbans	Rurals
Mannheim..	30.7	27.1	12.1	14.2
Heidelberg...............	38.2	26.8	14.6	15.9
Lörrach..................	33.9	29.5	4.8	13.7

Cities	Breadth of Head			
	Per cent. 16cm and above among		Per cent. less than 15cm among	
	Urbans	Rurals	Urbans	Rurals
Mannheim.	3.2	4.9	46.1	35.7
Heidelberg.....	5.5	11.4	36.1	19.4
Lörrach.................	14.5	19.1	12.9	21.5

For the rest of Germany and for Austria, we have only fragmentary data, which, as far as they go, confirm the results obtained in France and Baden. The following table presents

the case of Vienna in a way analogous to that in which a preceding table presented the case of Bordeaux :

Cities	Index	Per cent. of Dolichocephalics
High Austria, - - -	82.7	20
Low Austria, - - - -	82.2	25
City of Vienna, - - -	81.2	37
Suburbs { Bruck, - - -	81.7	32
Baden, - - -	81.8	31
Sechshaus, - -	81.8	32
Heruals, - - -	80.8	34
Country villages, - - -	83.8	10

In Switzerland researches are still in progress but the law is already verified as regards Geneva, Baden, and Zurich.

Italy presents a curious instance. The statistics based upon the measurements of nearly 300,000 soldiers make possible a most comprehensive comparison so far as regards the localities covered, but unfortunately the importance was not understood in time of distinguishing in each center of population between the natives and the immigrants from the country. We must therefore be content with a comparison in each province of the district (mandamento) which includes the chief center of population with the other districts of the province. This comparison is embodied in the following table :

Provinces	Indices of the	
	District which includes the chief place	Other districts of the province.
Salerno..................................	83.8	82.7
Bari	82.4	80.7
Foggia..................................	80.5	80.3
Lecce...................................	78.1	78.4
Potenza.................................	82.6	80.8
Catanzaro	79.4	78.5
Cosenza......	77.9	77.9
Reggio Calabria.........................	80.0	79.0
Caltanissetta	79.5	79.4
Catania	80.8	79.7
Girgenti	80.3	80.1
Messina.................................	79.8	78.8
Palermo	79.5	79.1
Siracusa	81.2	80.6
Trapani.................................	80.4	80.0
Cagliari.................................	80.5	77.2
Sassari.................................	78.6	78.1

Provinces	Indices of the	
	District which includes the chief place	Other districts of the province
Alessandria	84.6	84.9
Cuneo	86.7	85.8
Novara	85.4	86.2
Torino	85.6	86.5
Genova	82.1	82.4
Porto-Maurizio	81.8	82.2
Bergamo	84.2	84.3
Brescia	82.6	83.3
Como	84.2	84.7
Cremona	83.8	84.9
Mantova	83.8	85.3
Milano	83.8	84.3
Pavia	84.3	84.1
Sondrio	86.1	85.7
Belluno	85.5	85.2
Padova	84.8	85.3
Rovigo	84.2	84.6
Treviso	85.4	85.2
Udine	84.2	85.0
Venezia	83.8	85.0
Verona	82.7	84.4
Vicenza	84.7	85.0
Bologna	83.9	84.5
Ferrara	84.4	84.8
Forli	86.0	85.9
Mondena	84.1	85.0
Parma	83.2	85.0
Piacenza	83.6	84.9
Ravenna	86.7	86.7
Reggio Emilia	85.0	85.3
Arezzo	84.1	83.9
Firenze	81.7	83.1
Grosseto	84.6	83.0
Livorno	79.9	79.6
Lucca	78.0	79.7
Massa	78.7	80.3
Pisa	81.2	82.7
Siena	83.4	83.8
Ancona	83.2	84.0
Ascoli Piceno	82.3	83.1
Macerata	83.7	83.2
Pesaro	85.3	85.6
Perugia	85.0	84.1
Roma	79.9	81.0
Aquila	81.9	81.0
Campobasso	80.8	81.6
Chieti	83.4	83.3
Teramo	81.0	81.6
Avellino	82.5	81.4
Benevento	81.2	81.1
Caserta	81.3	81.8
Napoli	82.6	82.6

A study of this table will show that the law is verified in the case of the most important cities: Turin, Milan, Venice, Genoa, Florence, Rome, and in general also in the case of the secondary cities of northern Italy, but that in the south, where the Mediterraneans become more and more the predominant element in the population, the urban indices are higher rather than lower than the rural. On the basis of this table, Livi and Ripley have held that the law of urban dolichocephaly is not verified in Italy, but that the data are to be interpreted as simply showing that the urban populations, as compared with the rural, are more representative of the populations of the country over, and tend therefore to approximate more nearly to the average index. This interpretation, however, is clearly untenable; the average index of the 300,000 soldiers from all parts of Italy is 82.63, so that the indices of Rome, Florence and Genoa (which might be supposed to be the most representative cities) are below this general average index as well as below the index of the surrounding regions. Ripley's attempt to generalize this alleged explanation is especially unfortunate; in France all the great cities where data are as yet available show indices not only below the surrounding regions, but also below the national average, thus the index of Paris is two units, and that of Bordeaux three units, lower than the general index of France. Ammon and Closson have presented another explanation which is in accordance with the law but seeks to extend it to include in the comparison of races in this respect not only *Homo Europæus* and *Homo Alpinus*, but the Mediterraneans as well. They have held that the Mediterranean element is in general social capacity, and especially in the capacity for urban life and pursuits, inferior to both of the others, and that where the population is mainly composed of brachycephalics and Mediterraneans, the cities will draw rather on the former element and will therefore show the higher index.[1] This theory is a tenable one,

[1] See for a presentation of this view, CLOSSON : "Ethnic Statification and Displacement," *Quarterly Journal of Economics*, October 1896 ; "The Hierarchy of European Races," *American Journal of Sociology*, November 1897. AMMON, *Die Geschichte einer Idee.*

but the slightly higher indexes of the urban populations in the south can be explained more simply. The provinces which were united under the domain of the house of Savoy received a considerable immigration from Piedmont of functionaries and those following in their train. These Piedmontese came from a more brachycephalic part of Italy and were doubtless more brachycephalic than the average population of the south. From the nature of their occupation they were stationed mainly in the urban centers. It is then very possibly the fact that their descendants enter in some proportion into the ethnic composition of urban populations in southern Italy that makes these urban populations more brachycephalic than the rural. Were this exceptional factor absent, these cities would probably conform to the general law. It is necessary, however, in this and in many other cases, to take account (1) of the law of the intellectual classes, which we will presently examine, and (2) of the following modification of the law that we are now considering.

Every city whose sphere of attraction embraces brachycephalic regions tends (other things being equal) to become more and more brachycephalic, although the migrants drawn to it are less brachycephalic than the average of the rural population from which they come.— For example, Montpellier, which receives a large immigration from Cévennes and Aveyron, yields the following indices : urbans 81.6, surrounding rural population 81.6. The two groups thus show an exactly equal index. But until within a very recent period, the city was more dolichocephalic than the suburbs ; and within another short period it will be decidedly more brachycephalic. It tends to take the index of the emigrants from the highlands, which index is lower, indeed, by two or three units than that of the populations from which they come, but higher than that of the population immediately surrounding the city. The relation between the cities of southern Italy and Piedmont is exactly parallel with that between Montpellier and Aveyron.

In Spain, the city of Madrid yields an index of 77.8, the province of Madrid, exclusive of the city, an index of 78.6. In

the case of Barcelona, the figures are respectively 77.6 and 78.3.
The difference in each case is very slight. In fact the law
appears not to apply to Spain, nor to England, nor indeed to
any country in which the element *Alpinus* is unrepresented. It
appears to hold good always as between *Homo Europæus* and
Homo Alpinus; to apply only in limited degree as between *Homo
Alpinus* and other ethnic elements; and lastly either to be with-
out application or to be compensated by other laws (such as
the law of intellectual classes) in case of a homogeneous popu-
lation of Mediterraneans or of a homogeneous population of
Homo Europæus.

This law of urban indices is in close dependence upon (1)
the law of emigration, (2) the law of concentration, (3) the law
of urban elimination, and (4) the law of the intellectual classes.

LAW OF EMIGRATION.

*In a population in process of dissociation by displacement, it is the
less brachycephalic element which emigrates.*— In a large way,
colonial populations formed by migration are less brachyce-
phalic than the populations of the mother countries. In Algeria,
234 individuals of French antecedents yielded an average index
of 79.2; excluding some doubtful cases, 174 individuals
descended entirely from French colonists, yielded an index of
80.9, inferior by two units to the general average index of
France, 82.8. The index of the Italians resident in Algeria is
about 78, the average index of Italy is 82.7. Lajard obtained
from fifty skulls of Spanish Creoles of the Canary Islands
(males) an index of 74.5; Oloriz gives as the average index
of the skulls of Spaniards 76.45.[1] Lajard obtained from twenty
skulls of Portuguese Creoles of the Azores an index of 73.5;
Ferraz de Macedo gives as the average for 494 skulls of Portu-
guese 75. Ripley has obtained from measurements of students
of the Massachusetts Institute of Technology the following
average indices : First year students 78.6 ; second year stu-
dents 77.7; third year students 77.7 ; fourth year students 77.2.

[1] The average index of the heads of living subjects is 78.1.

These indexes may be compared with those of the educated classes in Great Britain :   For England 78.5, for Scotland 77.3. Data for a comparison between the masses in America and in Great Britain are lacking, but it is significant in this connection that New Zealand presents the lowest index so far as known of any Anglo-Saxon country.[1]   In the Caucasus, the Cossacks of Konbau have an index of 82.1 ; the inhabitants of " Little Russia " from which they came have an index of 82.9.   The Cossacks of Terek have an index of 81.1.

These data furnish so far only an indirect proof of the law; they show the descendants of emigrants to be more dolichocephalic than the home population, from which we infer that the original emigrants themselves were more dolichocephalic than the average of the populations they left behind.   Direct proof is obtained by measuring in a given locality migrants from various regions, and by comparing their indices with those of the regions from which they came.   For example, a series of 108 subjects measured in the department of Hérault gave an index of 82.34 as against 83.40, the average index of the depart-

[1] [In comparing the English with the American indices it is, of course, necessary to remember that the latter are doubtless somewhat raised by the presence of other than Anglo-Saxon elements among the American population, and that if only subjects of English antecedents were included, the indices would probably be materially lower than for the home country.   At the same time, it is still an open question how far this and the other laws will be found to apply to a population where the element *Alpinus* is so nearly absent as in Anglo-Saxon populations.   De Lapouge himself has pointed out this probable limitation in the case of the law of urban indices (see pp. 85 of this article).   In this connection I may quote from an earlier article of my own : " The degree of universality with which the law of the greater mobility of the dolichocephalic elements may be found to apply in different countries, is a question of great interest. . . . Will the law hold good, for example, in countries where the mass of the population is of the dolichocephalic type, as for example in England and the United States ?   We have seen that where the two elements are present, the brachycephalics are stationary as compared with the relatively dolichocephalic ; but it does not follow necessarily that these latter are more stationary than the still more dolichocephalic element common among the population of England, or in other words, that the migratory disposition continues to increase as the cephalic index falls.   There is indeed some reason for thinking that, on the contrary, the migrants belong pre-eminently to a sort of intermediate type."—" Dissociation by Displacement," *Quarterly Journal of Economics*, October 1896.   *Revue Internationale de Sociologie*, July 1896. —TRANSLATOR'S NOTE.]

ments of their origin. The detailed comparison is embodied in the following table:

Departments of origin	Number of subjects	Index of subjects (migrants to Hérault)	Index of department of origin
Gers	3	82.25	85.71
Ariège.....................	6	82.59	82.89
Pyrénées Orientales..........	8	81.80	78.63
Aude.......................	8	79.08	81.05
Tarn.......................	11	80.04	83.72
Aveyron....................	25	84.04	85.50
Lozère.....................	11	87.13	87.87
Ardêche....................	5	83.40	85.24
Gard.......................	24	82.43	83.12
Vaucluse.....	3	80.27	81.53
Bouches-du-Rhône...........	4	82.77	82.22
	108	82.34	83.40

A similar series of 128 subjects measured in the department of the Bouches-du-Rhône gave the following results:

Departments of origin	Number of subjects	Index of subjects (migrants to Bouches-du-Rhône)	Index of department of origin
Var........................	33	81.70	84.45
Alpes-Maritimes.............	30	81.80	84.22
Vaucluse	35	81.18	82.55
Basses-Alpes................	30	83.42	85.00
	128	82.02	84.05

Another parallel series of 97 subjects measured in the department of Ille-et-Vilaine is embodied in the following table:

Departments of origin	Number of subjects	Index of subjects (migrants to Ille-et-Vilaine)	Index of department of origin
Côtes-du-Nord	21	83.0	83.6
Finistère....................	27	81.3	82.0
Morbihan	21	82.8	82.1
Loire Inférieure	11	84.0	83.8
Manche	8	82.5	83.1
Mayenne	9	82.1	84.1
	97	82.6	83.4

Ammon has found the same results in Germany. Livi is occupied with researches which will determine how far the law applies in Italy.

<div align="center">LAW OF MARRIAGES.</div>

The cephalic index of the children of parents from two different regions is lower than the average between the indices of these regions.—This law may be stated in accordance with our verification of it in the following form : *The dolichocephalic members of a community are more apt than the brachycephalic members to choose their spouses outside of the residents of their own birthplace.*

This curious law was discovered in comparing in the case of natives of Hérault, the index of subjects whose parents were born in the same canton, with the index of subjects whose parents were born in different cantons. The first class of subjects may be designated as *cantonaux* and the second class as *intercantonaux*. The following table shows for adult male subjects, in the case of the department as a whole and in the case of each of the arrondissements, the difference between the *cantonaux* and the *intercantonaux* in cephalic index and also in the absolute dimensions of the head :

Arrondissements	Cantonaux				Intercantonaux			
	Number of subjects	Length of head	Breadth of head	Index	Number of subjects	Length of head	Breadth of head	Index
		mm	mm					
Montpellier	448	186	152	**82.1**	35	187	151	**81.1**
Lodève	81	186	153	**82.2**	10	195	155	**79.6**
Béziers	148	188	150	**79.9**	14	187	146	**78.4**
St. Pons	99	189	152	**80.6**	11	193	147	**76.2**
Total for department	776	187	152	**81.5**	70	189	150	**79.8**

The results of this table are substantiated by a comparison of a small number of female subjects : nine *cantonaux* giving an index of 78.1 and two *intercantonaux* an index of 76.9. Further confirmation is found in a similar comparison of two groups of

children : twenty-three *cantonaux* giving an index of 84.7 and
five *intercantonaux* an index of 81.5.

The difference in cephalic index between the *cantonaux* and
the *intercantonaux* is about the same in Ille-et-Vilaine.   A series
of peasants of the relatively dolichocephalic region of Bécherel
and Hédé formed the basis of a table in my *Sélections sociales*,[1]
which was unfortunately inverted through a typographical error.
The table should read as follows :

	Adult Males		Females		Children	
	Number of subjects	Index	Number of subjects	Index	Number of subjects	Index
Cantonaux	23	**83.5**	8	**84.5**	17	**85.0**
Intercantonaux[2].	12	**82.5**	6	**83.3**	5	**84.1**

In the department of Ille-et-Vilaine, as a whole, a series of
twenty-five *cantonaux* gave an average index of 85.5 ; a series
of twenty-five *intercontanaux* an average index of 83.0.   The
average head length of the *cantonaux* was 185^{mm}.0 ; that of the
intercantonaux 188.   The average head breadth of the two
groups was respectively 136 and 156.

The following table presents a comparison in several depart-
ments of France between subjects whose parents came from the
same arrondissement and subjects whose parents came from dif-
ferent arrondissements :

Departments	Parents from the same arrondissement		Parents from different arrondissements	
	Number of subjects	Index	Number of subjects	Index
Pyrénées-Orientales.................	5	**83.33**	2	**79.34**
Aude	6	**78.08**	2	**81.17**
Aveyron	18	**84.45**	7	**83.02**
Lozère	7	**88.35**	4	**85.15**
Gard..............................	22	**82.77**	2	**81.10**
	35	**83.39**	18	**81.95**

[1] P. 379.

[2] This group includes subjects whose parents came from different arrondissements
as well as subjects whose parents came from different cantons.

In accordance with this law we should expect subjects whose parents were born in different departments to be more dolicho-cephalic than the average population of the two departments of origin.   That such is the case is shown by the following table :

Departments of origin	Average index of the departments of origin	Interdepartmentaux	
		Number of subjects	Index
Ariège—Aude............................	81.9	2	76.6
Ariège—Hérault	82.7	1	81.8
Pyr. Or.—Aude..........................	79.8	1	79.9
Aude—Hérault	81.8	2	81.0
Aude—Tarn.............................	82.3	1	81.0
Tarn — Hérault...........................	83.1	16	79.5
Aveyron—Hérault........................	84.0	18	79.6
Aveyron—Vaucluse.......................	83.5	1	82.5
Lozère—Hérault	85.2	2	83.6
Lozère—Gard............................	85.5	3	83.9
Gard—Hérault	82.8	14	82.2
Ille-et-Vilaine—Morbihan	82.8	10	82.7
Ille-et-Vilaine—Côtes-du-Nord.............	83.6	23	82.2
Ille-et-Vilaine—Loire-Inférieure	83.7	7	82.8
Ille-et-Vilaine—Mayenne	83.9	6	82.6
Ille-et-Vilaine—Finistère	82.8	5	81.8
Finistère—Côtes-du-Nord	82.8	4	82.0

Ammon has obtained analogous results in the Grand Duchy of Baden, but further than this the extent to which this law is applicable is not yet determined.

LAW OF THE CONCENTRATION OF DOLICHOIDS.[1]

In the dissociation of the elements of population the migratory elements are attracted to the centers of dolichocephaly.—We have seen already : (1) that the migrants belong to the relatively dolicho-cephalic element, and (2) that the cities and the more fertile regions are populated by dolichoids.   It might then be said that "the dolichoid attracts the dolichoid," but in reality that which attracts the second dolichoid is the same thing that attracted the first: it is the more intense desire, characteristic of *Homo Europæus,* for an active and influential career and for a cultivated

[1] The term dolichoid is used to designate all subjects with an index below 80.

life. Wherever there is an opportunity he seizes upon it, if, indeed, he has not himself created it; and there is never lack of a brachycephalic to step into the place vacated by the dolicho-cephalic.

The discovery of the law of concentration is to be credited to Ammon, and his name is associated especially with that form of the law which concerns the particular case of urban concen-tration: "In regions where the brachycephalic type prevails, it tends to become localized in the rural localities, while the doli-choid type becomes concentrated in the cities."

The following table is taken from Ammon's *Natürliche Aus-lese beim Menschen*.[3]

	Index	Average head length	Average head breadth
KARLSRUHE			
Average of Karlsruhe district...............	83.0	184^{mm}	154^{mm}
Immigrants from other parts of Baden...........	83.1	184	154
Immigrants from outside of Baden.............	82.5	186	154
Demi-urbans (=sons of immigrants)..........	81.5	186	153
True urbans (=sons of residents of Karlsruhe).......	81.4	186	153
Subjects born in Karlsruhe of fathers from another city	80.2	184	149
Subjects born in another city of fathers from another city	81.8	185	152
Subjects born in another city of fathers from country..	80.3	184	151
Subjects born in country of fathers from country.....	82.8	184	153
FREIBURG			
Average of the Freiburg district...............	83.6	182	153
Immigrants from other parts of Baden...........	83.0	184	154
Demi-urbans....................	82.0	185	152
True urbans....................	80.8	187	151

The difference in average index between the several catego-ries results from the unequal proportion among them of doli-choid subjects. This is brought out in the following table:

	Average of Baden	Karlsruhe		
		Immigrants	Demi-urbans	Urbans
Per cent. of indices below 80	12.2	14.9	25.9	33.3
Per cent. of indices of 85 and above.	38.2	33.3	18.4	12.4

[3] P. 91.

	Average of Baden	Freiburg		
		Immigrants	Demi - urbans	Urbans
Per cent. of indices below 80	12.2	12.4	22.5	43.7
Per cent. of indices of 85 and above.	38.2	32.3	27.7	14.8

This process of the concentration of the dolichoids tends in general to raise the average indexes of the various regions concerned, by abstracting from the brachycephalic regions the least brachycephalic elements and adding these to populations less brachycephalic still. As examples of this result the following data may be given :

EMIGRATION FROM THE DEPARTMENT OF AVEYRON.

Department	Number of migrants	Index	Department	Number of migrants	Index
Aude	1,294	82.0	Lot	1,927	85.9
Bouches-du-Rhône..	4,098	82.2	Lozère.............	1,178	87.8
Cantal........	2,697	87.0	Rhône....	1,043	86.0
Gard...............	2,228	83.1	Seine...............	26,736	81.5
Haute-Garonne.....	3,289	83.4	Tarn....	4,607	83.7
Gironde...........	2,207	82.6	Tarn-et-Garonne ...	1,471	85.8
Hérault........	18,191	82.5			

Born in Aveyron 456,068, of whom 376,162 are residents of the department and 81,906 have emigrated therefrom. Average index of Aveyron, 85.5.

EMIGRATION TO THE DEPARTMENT OF HÉRAULT.

Department	Number of migrants	Index	Department	Number of migrants	Index
Ardèche	2,011	85.2	Haute-Garonne.....	2,703	83.4
Ariège.............	4,517	82.9	Lozère.............	5,945	87.8
Aude.............	7,507	82.0	Pyrénées-Orientales.	1,768	78.2
Aveyron...........	18,191	85.5	Savoie	1,082	87.4
Bouches-du-Rhône..	1,587	82.2	Tarn...............	13,462	83.7
Cantal	1,093	87.0	Tarn-et-Garonne ...	1,628	85.8
Gard	5,468	83.1	Vaucluse	1,369	81.5

Resident population of Hérault, 447,029; of whom 353,740 are natives of the department, and 88,289 immigrants thereto. Average index of Hérault, 82.5.

Urban life acts as an agency of selection in favor of the dolichoids and destroys or rejects the most brachycephalic elements. — Of the migrants to the cities the greater part perish there without descendants or drift back again in what has been called "the return current of population." Thus among the conscripts of Karlsruhe, Ammon found the numbers of immigrants, of sons of immigrants, and of sons of urban born, respectively 615, 119, and 48; and among the conscripts of Freiburg, respectively 403, 80, and 48. As between the different ethnic types, the dolichoids succeed much better than the brachycephalics in establishing permanent families in the cities. Thus in Karlsruhe the percentage of indices below 85 increased from 66.6 among the immigrants, to 81.6 among the sons of immigrants, and to 87.6 among the sons of urban born; at Freiburg the percentage increased correspondingly from 68.7 to 72.3 and to 85.2. So too, on the other hand, the percentage of indices of 85 or above fell off at Karlsruhe from 83.3 among the immigrants to 18.4 among the sons of immigrants and to 12.4 among the sons of urban born, and correspondingly at Freiburg from 31.3 to 17.7 and to 14.8.

Urban life exercises a selective influence also in regard to color. It has been noticed that urban populations are not distinguished from the rural by lighter coloration to the degree that they are by dolichocephaly.

The tables on page 86 indicate the prevailing coloration among the several categories of Baden conscripts.

Several explanations, all of them plausible, have been suggested to account for this phenomenon. It has been alleged that the dark coloration of the urban populations is due to the concentration of the dolicho-brown or Mediterranean type along with the dolicho-blond; or again that it results from the pres-

COLOR OF THE EYES.

	Karlsruhe		Freiburg	
	Per cent. light	Per cent. dark	Per cent. light	Per cent. dark
Average of Baden....................	63.3	36.7	43.5	55.0
" " the district................	56.6	43.4	23.5	66.2
Immigrants from the district...........	67.5	32.5	22.6	75.4
" " other parts of Baden....	59.0	41.0	29.8	69.5
" " outside of Baden.......	67.7	32.3	....	....
Demi-urbans.........................	55.5	44.5	31.3	67.5
Urbans proper.......................	64.6	35.4	52.1	47.9

COLOR OF THE HAIR.

	Karlsruhe		Freiburg	
	Per cent. light	Per cent. dark	Per cent. light	Per cent. dark
Average of Baden....................	43.5	55.0	43.5	55.0
" " the district................	31.7	67.4	23.5	66.2
Immigrants from the district...........	27.5	72.5	22.6	75.4
" " other parts of Baden,...	30.8	68.2	29.8	69.5
" " outside of Baden.......	38.1	60.3	....	....
Demi-urbans.........................	25.9	72.1	31.3	67.5
Urbans proper.......................	37.5	62.4	27.1	66.7

ence of a large group of mixed ancestry with the head form of *Homo Europæus* but the coloration of *Homo Alpinus*. In my opinion it is necessary to take into account two further explanations of this phenomenon. The first is that life in the city appears to produce a redistribution of pigment tending to whiten the skin and to darken the hair and the iris. The second is that the vitality necessary to resist the influence of the abnormal and debilitating life of the city is more often possessed by the least blond members of the race *Europæus*. We must not forget that the blondness of this race is a form of degeneration. There is then among urbans of the race *Europæus* a reversion to the ancestral type, to the races of the end of the quarternary period and of the neolithic epoch. I have never examined a series of the skulls of urbans and especially of the superior

classes, without being struck with the numerous likenesses to pre-historic skulls.   This atavism is, it may be remarked parenthet-ically, especially marked among the "Yankees."

LAWS OF STRATIFICATION.

The cephalic index is lower and the proportion of dolichocephalic greater among the higher classes than among the lower classes in each community.—This law appears applicable to regions inhabited by the brachycephalics and the Aryans, and perhaps also to those inhabited by the brachycephalics and the Mediterraneans.

Numerous local researches with reference to the correlation between race and social position have been made in France and Germany.   The recent work of Chalumeau in Switzerland, although based directly on a comparison of stature, shows a singularly regular seriation from the bottom to the top of the social scale.   In my *Sélections sociales* and in Ammon's *Natürliche Auselese beim Menschen* may be found some curious examples. I regret that I cannot now present some others more curious still which tend to prove a regular correspondence between the racial origin and the profession of the individuals concerned. These last data being as yet unpublished cannot be cited here. The following table taken from the anthropological statistics of Italy gives a comparison by provinces between the three catego-ries of intellectual classes, manual workers, and peasants, in res-pect to height and cephalic index (see pages 88, 89).

In the north of Italy, where, as we have pointed out in another connection, the comparison is between *Homo Europæus* and *Homo Alpinus*, the proportion of dolichoids is greater among the higher than among the lower classes.   In the south where the comparison is between *Homo Alpinus* and the Mediterranean race, the upper classes are often the more brachycephalic.   It has been suggested that we ought to conclude from this that the Mediterranean is inferior to *Homo Alpinus*, as is the latter to *Homo Europæus*.   My own opinion is that the phenomenon is simply the result of the domination of Piedmont.   From other tables in the *Antropologia militare* it appears that the brachy-

cephalics of the south are descended from the old subjects of the
House of Savoy, who moved into southern Italy. It is in any

Province	Per cent. of tall subjects (1.70 m. and above)			Per cent. of dolichoids (index below 80)		
	Intellectual classes	Manual workers	Peasants	Intellectual classes	Manual workers	Peasants
Allesandria..................	27.6	22.8	18.6	14.3	7.6	5.1
Cuneo......................	31.2	16.2	24.3	4.8	4.2	5.0
Novara	44.4	19.0	17.3	7.7	6.4	4.9
Torino.....................	35.2	13.7	15.1	6.2	6.5	6.6
Genova	39.9	20 9	19.2	25.7	24.4	28.3
Porto Maurizio..............	14.3	22.2	4.0	14.3	30.6	36.0
Bergamo	52.9	20.5	19.6	....	11.3	7.5
Brescia.....................	43.1	16.4	20.2	22.0	20.7	16.3
Como.......................	52.4	21.0	22.4	9.5	8.9	7.0
Cremona....................	33.3	18.2	8.8	16.7	15.3	8.8
Mantova	33.3	19 7	7.5	23.5	15.7	9.4
Milano.....................	42.5	19.6	17.0	14.1	10.6	8.8
Pavia......................	43.5	21.0	9.5	19.6	9.2	5.8
Sondrio	22.2	17.8	12.2	....	11.4	2.7
Belluno	68.8	8.1	26.2	6.2	4.2	4.8
Padova.....................	44.3	23.5	34.9	9.8	9.9	3.9
Rovigo	25.0	21.1	15.7	8.3	9.4	10.8
Treviso	44.4	30.8	30.2	11.4	6.1	6.3
Udine	56.3	30.9	34.6	15.6	11.3	6.2
Venezia....................	42.2	21.7	28.9	12.4	13.5	12.6
Verona	49.1	27.7	29.5	25.5	23.7	20.8
Vicenza....................	37.9	28.1	28.3	13.8	9.0	3.8
Bologna	38.4	23.3	26.7	15.5	13.6	7.0
Ferrara	31.9	18.4	15.9	13.3	11.4	6.4
Forlì	50.0	20.4	17.0	12.5	3.8	5.6
Modena....................	30.6	23.5	29.0	22.5	13.2	13.0
Parma.....................	30.5	16.2	10.6	6.8	18.3	17.4
Piacenza	28.3	23.3	12.3	19.2	14.6	9.1
Ravenna	50.0	22.4	21.1	....	4.8	2.5
Reggio Emilia..............	39.1	25.1	28.3	22.6	8.4	3.7
Arezzo.....................	48.7	17.2	21.2	....	12.7	11.0
Firenze	46.3	26.5	25.1	33.3	34.0	27.3
Grosseto	25.0	25.0	25.0	25.0	....	....
Livorno....................	34.0	24.9	20.9	46.9	53.0	29.1
Lucca.....................	59.0	37.2	41.9	59.0	68.1	69.2
Massa......................	41.7	20.4	21.3	41.7	61.1	63.6
Pisa	36.4	22.1	27.1	30.3	42.3	33.1
Siena	33.3	18.7	16.8	20.6	20.8	14.8
Ancona....................	35.2	24.6	12.8	28.3	30.9	13.0
Ascoli.....................	21.4	13.3	11.3	14.3	35.6	31.8
Macerata..................	26.7	15 5	7.8	7.1	25.7	15.7
Pesaro ,....................	24.2	17.8	13.4	15.2	9.4	6.6
Perugia	37.0	20.9	9.4	22.2	11.5	6.9

Province	Per cent. of tall subjects (1.70 m. and above)			Per cent. of dolichoids (index below 80)		
	Intellectual classes	Manual workers	Peasants	Intellectual classes	Manual workers	Peasants
Roma....................	39.3	20.6	14.8	41.2	52.5	42.5
Aquila...................	34.8	25.2	13.3	17.4	23.8	29.5
Campobasso..............	38.5	6.6	2.5	15.4	38.9	37.2
Chieti	35.0	12.6	7.3	5.3	19.4	16.7
Teramo..................	17.4	13.4	6.2	23.8	39.1	33.1
Avellino	31.0	10.2	9.6	28.6	20.4	28.6
Benevento...............	21.4	10.6	7.8	28.6	34.2	36.5
Caserta	13.6	12.3	11.4	18.2	33.5	40.6
Napoli..................	28.5	14.5	16.0	24.0	19.0	22.0
Salerno	25.0	9.9	6.4	10.7	13.6	8.2
Bari	26.8	13.3	13.9	24.4	24.5	34.2
Foggia	31.2	15.9	12.5	31.3	42.6	38.2
Lecce	42.3	14.6	12.5	59.6	76.2	74.3
Potenza.................	26.1	7.2	1.1	17.4	25.3	18.7
Catanzaro	20.8	12.5	3.6	60.9	60.2	57.4
Cosenza.................	21.4	12.4	12.1	64.3	67.0	78.1
Reggio Calabria...........	27.0	17.4	8.8	18.9	46.9	50.0
Caltanisseta	38.1	8.5	5.2	45.0	52.7	65.3
Catania	23.7	14.5	18.4	37.2	41.6	34.1
Girgenti	31.4	15.6	6.1	18.2	46.9	46.3
Messina.................	24.6	17.4	13.8	45.3	47.1	50.8
Palermo	26.7	21.7	16.1	45.6	56.0	54.5
Siracusa	25.8	12.0	14.1	34.5	32.0	37.2
Trapani......	37.5	23.1	16.4	37.5	40.4	44.5
Cagliari.................	21.4	7.1	9.8	42.9	42.9	55.9
Sassari	11.6	10.7	4.1	55.8	65.6	75.0

case uncertain in just what form the law of stratification will be found to apply in countries where the Mediterranean element enters largely into the population.

It is notable that even in southern Italy the stature of the subjects is in close parallelism with their social position. Further, an analysis of the data indicates that the superior height of the upper classes is not due alone to the predominance of individuals of Piedmontese origin. This parallelism between social position and stature is indeed much more universal than that between social position and cephalic index. Chalumeau in his *Influence de la taille humaine sur la formation des classes sociales* has shown the closeness of the correlation: individuals of tall stature (over 1.70) constitute over 30 per cent. of physicians,

ecclesiastics, students, advocates, veterinary surgeons, architects, engineers, pharmacists, brewers, teachers, merchants ; running from 47 per cent. among physicians to 31 per cent. among merchants, and from 11 to 7 per cent. among various categories of artisans and operatives.   Verneau in criticising another work of Chalumeau, has expressed a doubt as to the truth of the law that the more intellectual classes contain the larger proportion of individuals of tall stature.   The answer is to be found in the work of Chalumeau above cited for Switzerland, in Livi's statistics for Italy, in those of Beddoe and of Quételet for England and for Belgium.   In all these countries and in all others in which similar statistics have been compiled, the correlation between height and social position has been verified.   By way of a last example, I cite here the results of Oloriz in Spain :

	Stature	Cephalic index
Intellectual classes, - - - -	1.62^{m}	78.2^{m}
Intermediate, - - - -	1.61	77.9
Manual laborers, - - - -	1.60	77.8

LAW OF THE INTELLECTUAL CLASSES.

Among intellectual workers the absolute dimensions of the head, and particularly the breadth, are greater than the average.—This law was long ago formulated by Durand de Gros, who working at Rodez found the length and breadth of the head among the educated respectively 187^{mm} and 155^{mm}; among the uneducated respectively 180 and 151.   It has since been verified in many countries by the comparison of students with the average population.   The greater size of the head among the intellectual classes is not due to an expansion of the brain by its training and activity ; the difference is, according to my own researches, quite as marked between young children of the intellectual classes as between the adult members of the same groups.

Social status is then in correlation with the dimensions of the head as with the stature.   Meager statistics under this head have as yet been published, but manuscript data in my possession

point to the following order of the professions : students of
science, of letters, of agriculture ; students of law, merchants
and public administrative employees, artisans, factory workers,
day laborers, and peasants. I have intentionally separated
students of law from the other students ; as there is an appre-
ciable difference between them in the dimensions of the head.
This difference becomes marked when one compares a group of
professors of science or of literature, the élite of their category,
with a group of magistrates, recruited for the most part among
the graduates in law incapable of finding an independent position.

This law of the intellectual classes tends to come into seem-
ing conflict with the law designated above as the law of stratifi-
cation.   The intellectual worker tends to possess an exceptional
breadth of head more marked than the exceptional length.   He
is likely then to be less dolichocephalic than the average of his
social compeers, he is likely to possess a degree of eurycephaly
which may be easily confused with brachycephaly.   This aspect
of the matter has been considered by Ammon in his anthropo-
logical study of Prince Bismarck, by Collignon in his researches
on the Basques, and by Ujfalvy in his recent work, *Les Aryens au
Nord et au Sud du Pamir.*

It follows from this that in a region where the brachy-
cephalic race is not present in an appreciable degree, the upper
classes may present an average cephalic index higher than the
mass of the population.   This occurs, for example, in Spain,
where the average index of the intellectual classes is 78.2, as
against 77.8 for the manual laborers.   It occurs also in the Brit-
ish Islands, where the index of educated Englishmen is 78.5, as
against 77.8 for the average population of Great Britain.   In the
south of Italy the same phenomenon co-operates with the inva-
sion of Piedmontese, already discussed, to raise the index of the
intellectual classes.

LAW OF EPOCHS.

*Since prehistoric times the cephalic index has everywhere and con-
stantly tended to increase.*— The length of the head has tended,

and still tends, to decrease and the breadth in general to increase. This is one of the first established laws of social anthropology, and it is unnecessary to enlarge upon it here.[1]

The laws enumerated above are obviously closely connected and tend to merge one into another. It appears that they may properly be regarded as the detailed and partial statements of various phases of one general law, formulated by Closson and designated by him as the Law of Lapouge, viz., *the law of the greater activity of Homo Europæus.* The particular laws that we have examined are, indeed, only a few among a multitude of similar generalizations, some of which are established, others of which have been vaguely perceived in the course of studies undertaken in the verification of the former, and which will require prolonged special researches before their significance can be fully understood. We are as yet only on the threshold of the discoveries which will result from a thorough ethnical analysis of the populations of the civilized world, particularly of Europe, and from a study of the data thus obtained in the light of the methods of anthropo-sociology.

<div align="right">GEORGES VACHER DE LAPOUGE.</div>

RENNES, FRANCE.

[1] Cf. *Les Sélections Sociales*, pp. 34, 382, 412–420.